

FIRST
HISTORY LESSONS

THE FLOW OF RIVERS

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First History Lessons: The Flow of Rivers

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GANGES-BRAHMAPUTRA DELTA



Here's a short section from the play *Muktadhara*. Read the entire play when you have the time.

Messenger: For all these years you have been blocking our Muktadhara waterfall with your dam. It has crumbled many times, so many people have been buried in the dust, so many more have been swept away in the flood. And finally, today...

Bibhuti: They did not give up their lives in vain. My dam has been completed.

Messenger: The people of Shivterai do not know this yet. They cannot believe man can stop the flow of the water they have been granted by the gods.

Bibhuti: The gods have given them nothing but water, but to me they have given the power to control the water.

Messenger: They live in assurance, they do not know a week later their farmland...

Bibhuti: What's that about their farmland?

Messenger: Was your intention behind constructing a dam anything but destroying their farmland by making it run dry?

Bibhuti: My intention was that human intelligence would triumph by destroying the conspiracy between sand and rock and water. I had no time to consider which farmers' cornfields might die as a result.

Messenger: The prince has asked whether the time to think about this is not here yet.

Bibhuti: No, I am thinking of the greatness of mechanical power.

Messenger: Can the tears of starving people not break your resolve?

Bibhuti: No, the force of the water cannot demolish my dam, the force of tears cannot shake my machine.

Rabindranath Tagore, *Muktadhara*, 1922 (Bengali 1329)

1. Relationships: Rivers and people

It's impossible to write a history of humans without rivers. Silt flowing on the river is deposited as soil. The water from the river nourishes it, so that we can grow crops on this soil. And then ships and boats that take these crops arrive along the river to the markets where they are sold. It's not just crops—trade in many items of necessity as well as luxury has been conducted through rivers for a long time now. People also travel on rivers to their destinations on all kinds of work. Rivers and river-water are closely intertwined with all the essentials of life. So many villages and towns, markets and cities, ports and ancient civilisations have grown around rivers.

Take the Ganga. It covers a long distance from its origin in the mountains to where it finally meets the sea. And on its banks lie innumerable agricultural fields, enormous markets, thousands of villages, and bustling towns and cities. Not just these, there are also factories, temples, mosques, and crematoriums. The river has enabled people to make a living and created many opportunities for business. It is also replete with religious rituals and celebrations, of music and literature. But despite all our reliance and

reverence, we aren't able to protect the Ganga. It has become toxic with pollution. We seem to have maddened the river with excessive construction of dams. And in some places, borders have been drawn in a way that two states or two countries are locked in battle over who will get the larger share of water from rivers.

As a matter of fact, ever since humans have been living next to rivers, there has been both understanding and competition to survive between them. The river gives a great deal, but then it takes away a lot too, you see. Floods sweep away homes and overflow river banks to devour the land. And yet humans cannot do without the water from rivers. So, although humans have adjusted to rivers, they have also tried to block or change the course of rivers to control them to some extent and put them to their own use. And there's no end to human demands. We have been living on fish and other resources provided by rivers for such a long time. We have blocked the path of rivers with dams to generate electricity. Oil discharged by steamers and ships and the waste spewed out by factories keep flowing into rivers. The human population has kept increasing, and, forced to meet its requirements, rivers are sending out SOS signals.

To write a history of rivers, then, it is essential to write of the relationship between rivers and humans. And to explain how this relationship has changed with time. The history of a river starts the day it starts flowing, but it's difficult to pin down the actual beginning and ending of this history. And the sheer number of rivers in our country is probably beyond count. Take large rivers like the Ganga or the Padma or the Brahmaputra—their histories span thousands of years of making and breaking. So many kings have come and gone, so many kingdoms have been established only to wither away. We cannot cover every one of these histories, from the very beginning, in this slim book. So we have picked a small region of eastern India and Bangladesh. We will look back at fragments of history around the two large rivers in this region—the Ganga and the Brahmaputra. The river Narmada will make an entry too.



2. The Ganga-Brahmaputra Delta

An enormous triangular delta has been formed with the silt flowing in on the two large rivers, the Ganga and the Brahmaputra, and their numerous distributaries. It has been named the Ganga-Brahmaputra Delta, after the two largest rivers in the region. The river Meghna is another large river in this delta, so it is sometimes referred to as the Ganga-Brahmaputra-Meghna Delta. It is also called the Gangetic Delta or the Bengal Delta. Parts of this delta are now in West Bengal and Assam in India, while the rest is in Bangladesh.

The rivers in the Bengal Delta don't follow the same path for very long—they change course repeatedly. What's more, they even have separate names at different points along their long journey. Beginning its journey in the Himalayas in the north, the Ganga passes through a number of states before entering West Bengal. At the village of Mithipur in the district of Murshidabad it forks into two. In the east the river flows with the name of the Padma, while in the west it takes on the name of the Bhagirathi-Hooghly. When the border was drawn at the time of the Partition, these two streams

of the Ganga were given to two separate countries. The Padma belonged to East Pakistan then and is in Bangladesh now, while the Bhagirathi-Hooghly is in India.

The Brahmaputra flows through three countries. Some of it is in China-controlled Tibet, some in India, and the rest in Bangladesh. It flows eastwards in the westernmost part of Tibet under the name of the Yarlung Tsangpo. Then it turns southwards abruptly, taking a tight turn and entering India through Arunachal Pradesh in the extreme north-east, where it is known as the Dihang. In Assam it takes on the name of the Brahmaputra. And after it enters Bangladesh, it is known as the Jomuna. The Jomuna flows into the Padma. Eventually, then, both the Ganga and the Brahmaputra come together in the Bay of Bengal. The delta region, where the rivers meet the sea, is full of Sundari trees. It is an area of creeks and water and jungles known as Sundarban. Even this Sundarban belongs in part to Bangladesh and in part to India.

But you cannot confine yourself within the borders of states and countries when telling the stories of rivers. Borders have been drawn by humans, and

only recently. What does the river care for them? It flows happily from one country to another, bringing water to the land of one state before moving on to the next. So, to know the history of the rivers in Bengal and Assam, we must keep the entire delta region in mind. In this book we will talk mainly of the Ganga and the Brahmaputra. But the way of the rivers in the delta is such that even if you try to tell the history of a single river, you cannot limit yourself to it. All the rivers flow into one another and then send more streams out, spreading a gigantic net over the entire area. So, the histories of the Ganga and the Brahmaputra are crowded by stories of rivers like the Saraswati, the Jomuna, the Ichhamati, the Jalangi, the Mathabhanga, the Churni, the Garai, the Tista and many others. In this book, for instance, we will frequently encounter the Saraswati, the Karnaphuli, the Gandaki, and the Koshi rivers.

Let's go back a little in time before we begin. Soon after they set up base in Bengal, English merchants, who gradually turned to rulers, started making arrangements to control the rivers in different ways. But it wasn't as though similar efforts had not been made earlier. A long time ago, back in the fifteenth century, Feroz Shah Tughlaq had begun the system of excavating

canals to bring water from rivers to fields where crops were grown. He had even built enormous tanks to store this water. Well before the British began ruling India, the Ahom kings had constructed small dams and made the banks of the Brahmaputra higher. But the British did the same things on a much larger scale. The land and soil and water of India were all valuable resources for them. They introduced a number of new systems, new laws, and new technologies to increase their profits from trade, to extract higher taxes from peasants, and to enable people and goods to travel quicker. Not only did most of these systems continue after India and Pakistan became independent, but they also became stronger. But these grand experiments with rivers didn't always end well. We are still suffering from the fallout of many of the changes brought about during British rule in the way rivers flowed. So, to understand present-day problems like floods, droughts, diseases, and pollution, we need to make enquiries about the British era. How has the relationship between rivers and humans changed since then? I'll tell you some stories about this.



3. Trade through river routes: The story of reaching world markets

The fertile silt-enriched soil of Bengal constantly irrigated by the river ensured bumper harvests for Mughal emperors. Trading in high quality cotton and silk also brought them handsome earnings. No wonder the region caught the eye of European countries. From the sixteenth and seventeenth centuries onwards, merchants from that part of the world arrived in Bengal to trade here. The Portuguese were here before anyone else. Trade wasn't conducted through the port of Calcutta on the bank of the Hooghly then. The Bhagirathi had a distributary named the Saraswati at that time. Saptagram, situated on its bank, was an affluent trading town. It was about thirty miles north of Calcutta, close to where the town of Chinsurah stands today. The Saraswati ran quite deep at the time, and the large Portuguese ships sailed on it easily. They used another port too, which was located near the sea, on the bank of the Karnaphuli in Chattagram, which is part of Bangladesh now.

But silt deposits led to the clogging of the Saraswati. And once a river

silts over, large ships can no longer ply on it. So, the importance of the Saraswati declined, and, along with it, of Saptagram too. The importance of the Hooghly river, which was deeper, kept rising. The Hooghly is the last section of the Ganga, just before it flows into the sea. So this river, situated close to the Bay of Bengal, was connected to the markets of the world by merchants from Europe who came to India. The Portuguese didn't have a monopoly on trade very long, though. Merchants from other European countries arrived in India soon after them. And all of them established their bases, one by one, on the bank of the Hooghly. The Dutch chose Chinsurah, while the French picked Chandannagar. The merchants from Denmark settled in Serampore. And the English dropped anchor in the three villages of Gobindopur, Sutanuti, and Kolikata on the other bank of the Hooghly. The link between the river and the sea had made the area around the Hooghly rather attractive for trade. There was tooth-and-nail competition between the merchants from these European countries for the largest share of business. Eventually, of course, it was the East India Company of England that proved to be the most powerful and stayed on in Bengal.

The Company had come to India for business. Gradually, it pushed the other European countries into a corner. Then, after defeating Sirajuddaulah, the Nawab of Bengal, in the battle fought at Plassey near the Ganga at his capital, Murshidabad, the East India Company took over control of Bengal. In 1765, the Company extracted the dewani or stewardship of Bengal, Bihar and Orissa from the Mughals, who had become weaker by then. This gave them the right to collect taxes. As a result, they gained considerable control over the entire delta region. Slowly the British built the city of Calcutta where the three villages of Gobindopur, Sutanuti, and Kolikata had stood amidst water bodies and jungles. And around it they developed the kingdom of Bengal. So, behind the creation of the first base for what became two hundred years of colonial rule by the British lies the history of how the river Hooghly grew in importance. The more the Hooghly flourished, the more the marshes of the delta changed. Ports, forts, roads, buildings, and mills sprang up.



4. The land and water of Bengal:

The story of sand bars and islands

The East India Company had originally come to this country for trade. But once they received stewardship of Bengal, Bihar, and Orissa, the officers of the Company began to pay attention to the ways in which they could squeeze out the maximum amount of taxes from peasants. The land, forests, and rivers in the area were unfamiliar to them. So too were the people and the way they passed their days or grew their crops. So, the Company hired a large number of experts from Europe to understand the nature of the land and the water in Bengal, and to make maps. An expert in geography named James Rennell prepared a number of maps of Bengal's rivers.

After much thought and many consultations with those in the know, the Company chose the method it would use to get the maximum possible taxes. First it was decided that the boundaries of each plot of land would be fixed, and the names of the owners would be recorded. The amount of tax that the landowner would pay would also be fixed permanently. The landowner, or *zamindar*, would in turn collect taxes from those who cultivated his

land. Whatever was left over after paying the Company its dues would be his profit. The experts reckoned that since the *zamindar* stood to gain, he would have the urge to get the most out of his land. This would increase cultivation, and the taxes would never stop. The Company put this plan into action immediately. In 1793, Lord Cornwallis, the governor-general of the Company, made permanent arrangements on these lines with each of the major *zamindars* in Bengal, Bihar, and Orissa. This was how the Company tried to finalise everything from land boundaries and owners to the amount to be paid as tax.

But can anything be finalised permanently in a region where the land and the water both keep shifting? In the Bengal delta, where rivers run through the entire area, the land is never still. It breaks and is formed again constantly. The rivers here are restless, they change course frequently and move away from where they were. They flood their banks, submerging a lot of land. At the same time, the silt flowing on the river gathers in the middle, giving rise to sandbars in the water, like small islands. Those who lived and grew crops close to the Ganga and the Brahmaputra and their distributaries had to adjust to the moods and whims of the rivers. They would increase the

height of a portion of the land to make a village on it. When the river shifted, so did they, building houses afresh. But the East India Company wanted to keep official records of the extent of land owned by each person, and how much tax they should pay, on a permanent basis, by law. This would make it easier to collect taxes.

But how could this be possible in the Bengal delta? Would taxes on submerged land be excused? Who would be considered the owner of the newly-formed islands in the middle of the river? Furious arguments broke out with zamindars over these details. The landowners and farmers and fishermen of Bengal used to enjoy a number of rights before this. But it wasn't as though these rights existed officially on paper — they were practices that had been followed for generations. For instance, the *zamindar* would usually get his cultivators to farm on land newly risen out of a river that used to pass through his estate. In some places farmers and fishermen had unrestricted rights to the fish in the river running near them. It proved difficult to make room for such practices under the East India Company's new and permanent laws. And considering the Company wanted to maximise its profits, why would it even accept such practices?

The Gandaki flows from Nepal into the state of Bihar in India and joins the Ganga near Patna. At the beginning of the nineteenth century this area was part of the Bengal Presidency. Bidanund Roy was the landlord of an enormous estate by the Gandaki. This river altered its course bit by bit every year. Portions of Roy's land at one place were submerged by the river overflowing its banks, but somewhere else new islands emerged from the water. Meanwhile, the East India Company had fixed a permanent tax, to be paid forever. So, the tax on the part of the land that went under water didn't change. But Roy didn't protest. He lived there and knew the ways of the river well. He simply settled farmers on the newly emerged island and covered his losses with the crops they produced. He had done the same thing earlier too. But in 1819 the son of another landlord, his neighbour, complained to the East India Company that the newly formed islands that Roy was farming on actually belonged to his father. A serious problem. When the taxes were fixed on all this land, the islands didn't even exist. And now not one but two landlords were laying a claim to it.

In a similar incident, the Collector of the district of Rajshahi learnt that several islands had risen in the river Padma somewhere between Rajshahi

and Murshidabad, and the local *zamindar*, king Udyant Singh, was having it farmed and collecting taxes. Likewise, the Collector of the district of Comilla was informed that eighty-two new islands had sprung up in the Padma between 1793 and 1827. Rice was being grown on them in large quantities. The East India Company realised they were losing revenues. Finally, they made a new law in 1825. Let's say a *zamindar's* land stood on the edge of the river, and an island of silt had been formed in the middle of the same river. But the water between his land and the new island wasn't very deep, so that one could just walk across. The law said in these circumstances the *zamindar* would be considered the owner of the new island. So he could get people to farm on it and collect taxes from them. But if the water between the land and the new island were deep enough for boats and ships to sail on it, the *zamindar's* claims would not be entertained. Only the Company had the rights to the island in that case. Zamindars had been enjoying many rights all this time. They weren't going to meekly accept these rights being snatched away by a foreign ruler on the basis of laws. So, a series of court cases were filed against the Company. As each verdict was issued, the law was changed accordingly. Fresh cases followed. The law for new islands was changed four or five times between 1825 and 1885.



5. The land and water of Assam: The story of *chapori*

The more firmly the East India Company entrenched itself in Bengal, the greedier it became to extend its empire to the surrounding areas. They had realised that to expand trade in the region to the north-east of Bengal, they would have to control the Brahmaputra. Only by seizing control of the river would they be able to gain control of the trade routes and natural resources. It took them some time to extend their rule over Assam. Early in the nineteenth century the rulers of Burma had tried to oust the Ahom king and grab this region for themselves. They had wrested control of the Brahmaputra. Meanwhile, the British had set their sights on Assam as well. A fierce war broke out between them and the Burmese. Finally, the British won the war in 1826, and took over Assam, Manipur, and the Arakan. Along with this they also assumed control of the Brahmaputra, using its water and the land it irrigated in various ways to make money from the cultivation and trade in the region. But the nature of farming here was different from the one in Bengal. So, they had to change the system for collecting tax.

Before the advent of the British the people of Assam did not distinguish between the land on the bank of the Brahmaputra and the islands of silt rising in the river. They referred to all the land co-existing closely with the water as *chaponi*. The British had recently set up their tax-collection system in Bengal. Bringing their experience with land there to Assam, the first thing they did was classify these two types of land differently. The land on the riverbank was named *chaponi*, and the islands in the river were known as char. The writings of the first British officers to go to Assam reveal their descriptions of the region—if you sail along the Brahmaputra, all you see on the river bank are empty fields, without a soul to be seen. Only once you get off the boat and walk a little inland do you see houses and people.

Actually, it was the behaviour of the Brahmaputra waters that determined the nature of the land in Assam and what the lives of farmers would be like. The cultivators would build their homes keeping in mind the seasons—when the floods would come and when the water would recede. They never lived permanently on the river bank. Every rainy season the river would swell and flood the land around it. When the waters had receded by winter, the farmers would live for some time beside the river. On the fertile soil made

up of freshly deposited silt, they would grow mustard, opium, and, at the end of winter, rice. They would move farther away from the river before the rainy season. But the Britishers were obviously not used to this kind of farming. In their scheme of things, the farmer would live somewhere permanently, grow crops year after year on land marked out for him—only then would villages and towns, cities, and civilisation at large emerge. They tried to think up ways in which these ever-shifting farmers could be made to stay in one place without moving constantly.

So, the British offered to lease the land next to the river for a year to the farmers as encouragement to settle down. But how were Assam's peasants supposed to change their long-standing practices overnight? It took a long time to bring about such a major change in the way they grew crops. It wasn't just mustard, gradually even jute began to be cultivated on the *chapori* land in many of the districts of western Assam. The farmers started moving closer to the river. There was more farming now on the *chapori*, and with the larger harvest came higher taxes. But trouble was, now that they were nearer to the river under the new system created by the British, the farmers were also closer to the flood. And even today we hear of houses beside the

river being swept away when the water rises, of many people losing their lives. All of this began in the time of English rule.

So much for farming on the plains in the lowlands. Meanwhile, around 1830 it was discovered that tea could be cultivated on the slopes of Assam's hills. At the first sniff of such a profitable business, many businessmen from England and Scotland began to invest their money in setting up tea gardens in Assam. But it wasn't enough to just start growing tea, arrangements to sell it had to be made too. For this the Assam tea would have to be sent to the port, and from there by ship to markets around the world. Besides, a large number of workers would be needed to work on the tea plantations, which meant getting them from outside Assam. In the nineteenth century, the Brahmaputra was put to use as the route for moving material as well as people. Once Assam was linked this way to the Calcutta port, it became connected to markets around the world. But before we get into that story, let's go back for a bit to the area around the Hooghly.

6. Rivers and travel: The story of steamers

In 1807, Robert Fulton began running steamers on New York's Hudson river in America. The East India Company rulers felt it would be extremely profitable to run similar steamers in India. They would be able to navigate the tight bends and shallow stretches in the Ganga easily, and they would have no trouble stopping at the smaller ghats. Traders would be able to transport their products in larger quantities, faster than they did with boats. This would mean higher profits. The first steamer began operating in 1828. Named *The Hooghly*, it travelled all the way to Allahabad from Calcutta. The banks of the river Yamuna in Allahabad were teeming with people that day. Everyone had crowded the spot for a glimpse of this astonishing boat. No one had to row it, and still it was moving. Within a few years, numerous steamers began to ply on the Ganga. Both goods and people started travelling on the steamer service between the towns and cities on the banks of the river. The East India Company also took steamers to transport its officers, soldiers, horses, and so on to various cantonments so that it could protect its kingdom.



The direction of the winds on the Ganga was such that it helped the running of steamers on the river. But in the rainy season the Brahmaputra was much more turbulent. Its currents were uncontrollable, and the winds raged fiercely. Much more coal and steam power was needed to run the steamers at this time of the year. When the British realised during the war with the Burmese that they wouldn't be able to make headway in Assam without controlling the Brahmaputra, some of the East India Company officers spoke of the need to run steamers on the river. Although they tried hard for quite some time, the British couldn't start the steamer service because of the hostile mood of the river. Several years had passed after this, and the cultivation of tea had begun in Assam. Now the tea companies started pressuring the British to run a steamer service. Or else it would be very difficult to get their tea to the markets. *The Blackburn Standard*, a British newspaper, said that the tea estates were a long way from Calcutta, but the distance would be diminished if arrangements could be made to run steamers all year round on the Brahmaputra. Finally, after years of effort, the British did manage to harness the river for their purposes.

After crossing Assam on its way southwards towards the sea, the

Brahmaputra, known as the Jomuna in Bangladesh, joins up with the eastern branch of the Padma. In 1847, this confluence of the Ganga and the Brahmaputra was used to launch the first steamer between Guwahati and Calcutta. Leaving Calcutta port on 13 August, it arrived in Guwahati on 29 August. The newspaper *Arunodoi* from Assam ran the news of the excitement on seeing the mechanical boat. The editors were very pleased too—earlier it used to take four months for the movable type used in printing presses to arrive from Calcutta; it would be delivered far quicker now. The tea business flourished after the steamer service was started. It wasn't just to transport tea, the steamers also proved important for bringing labourers from distant places to work on the tea gardens. So many people from the Chhotanagpur region used to travel by steamer from Calcutta to Assam to work on tea plantations. So the tea companies kept pressuring the authorities to introduce more steamers. After the Calcutta-Guwahati-Calcutta steamer had run without trouble for nearly ten years, another service was launched, this time running all the way to Dibrugarh at the extreme eastern end of the Brahmaputra. It wasn't just the trade between Assam and Bengal that grew after the steamers began running, but Assam's

connections with world markets also became stronger.

It wasn't easy to operate steamers on turbulent rivers like the Ganga and the Brahmaputra, which also had many islands rising out of their waters. Most of the steamers plying on these two rivers belonged to the Royal Steam Navigation Company. In his history of the company, Sir Percival Griffiths wrote that in many countries rivers were the way to identify routes—sailors who had lost their way could use the course of the river marked on a map to find their way back. But the Ganga and the Brahmaputra seemed to be just the opposite. Comparing the course of these rivers with the previous year's maps would show that they had shifted greatly. Which was why even experienced sailors had to depend on the wisdom of local fishermen and boatmen who knew the eccentricities of these rivers like the back of their hands. Even after the advent of steamers, the usefulness of the dinghies these boatmen ran was not diminished. Steamers didn't operate everywhere in Assam, after all. Crates of tea used to be transported on dinghies from the interior regions to the steamer ghats, from where the steamers took them to Calcutta.



7. Rivers and travel: The story of railway lines

Even as steamers were being run on the large rivers of the Ganga-Brahmaputra delta from the middle of the nineteenth century, work had also begun on setting up railway lines to enable commodities and people of the colony to move more quickly between different places. There were enormous factories in England, with large numbers of labourers. The fabric and other items manufactured in these factories used to reach different parts of the world. Huge quantities of raw material used to be sent from the Indian subcontinent to these factories. Many wanted railway lines to be constructed in India, so that raw material from different areas could reach the port quickly, and get to England faster too. In 1845, a Scottish engineer named Macdonald Stephenson proposed setting up a gigantic railway network in India to link Calcutta, Bombay, Delhi, and other big cities.

But would it be right to set up railway lines in the delta region of Bengal? This was hotly debated in the British Parliament. In 1848 a report came out strongly criticising Stephenson's proposal. It pointed out that the rivers and

HOW KOSHI CHANGES ITS COURSE



creeks and canals and ponds were the life of the Bengal delta, and railway lines would demolish the natural flow of water in the region. Instead, let there be just the one railway line to Calcutta from the head of the Bengal delta, where the river Koshi flows into the Ganga in Malda. Let the rest of the delta be connected to Calcutta through river routes. At that time the Koshi used to merge with the Ganga near Manikchak in Malda, but it has shifted westwards now. However, the objections raised in the report found no takers. Meanwhile, a group of Indian soldiers in the British Army mutinied in 1857. After this the responsibility for ruling India passed from the East India Company to the British Queen. The rulers felt that it wasn't just raw material or commodities, railway lines would also be necessary to despatch soldiers quickly from one location to another in case of another mutiny. So, massive preparations began for setting up railway lines in Bengal.

As I've mentioned before, it wasn't as though the British rulers understood the ways of India's rivers very well. It was a headache for British engineers

to ensure that the railway lines were not set up on land where they might be swept away according to the whims of rivers. At the time the East India Company began collecting taxes in Bengal, it was a regular affair for land to be flooded. High earthen embankments were constructed to hold back the water from rivers in flood. The engineers decided to build similar embankments and lay the railway lines on them. It was like a competition against the river—only a win would lead to building railway lines successfully. The first train from Calcutta ran to Kushtia, in 1862. In 1865 the line was extended to Goalanda. The Goalanda steamer ghat is situated at the confluence of the Brahmaputra and the Padma—a vital spot in the link between Assam and east Bengal on one side, and Calcutta on the other. With the coming of the railway a connection was established between trains and steamers. The railway line was further extended northwards in 1902 to reach Dhubri in Assam.

One record shows that some 3,500 miles of railway lines were contemplated for the Ganga-Brahmaputra delta, with almost the same length of embankments

also being built. The natural flow of Bengal's rivers was impeded terribly as a result of this. Even today the people here are suffering from the adverse effects of this move. Unable to flow in any direction at all, many rivers have dried up and died. Obstructed on one side, some have swollen so much that they have swept away the land on the other. There were dreadful floods in different parts of Bengal after the construction of the railways. Crops were damaged severely. And that's not all. Because the earth was being dug out of one place and piled up in another to form embankments, deep, enormous pits were created in several places. Rainwater collected here, with no way to escape because of the high rims. So the people of the delta were afflicted by diseases like malaria and cholera because of germs breeding in the stagnant water.



8. River dams: The story of water-sharing

The country had just been partitioned. So many people had lost family and friends in the riots. The memories of violence were still fresh in everyone's minds. Jeena and Karimdad were spending their days in a village in Pakistan, their memories still as raw as wounds. One day, the village midwife Bakhto ran into Jeena and told her, "Have you heard, India is going to block the river water, we'll starve to death!" Jeena didn't know what to say; she had never heard anything so outlandish. How could you block river water? The river decided for itself which way it would flow; how could humans control it? When Karimdad came home she asked him what was going on. Yes, he had heard the rumour too, and the villagers were furious with India. Never mind that they had lived together all these years, Pakistan and India were enemies after the Partition. This was apparently a new way to crush the enemy. Block the course of the river in a way that prevents the water from reaching the neighbouring enemy country. No guns or swords needed: the people of the enemy country will die because of the lack of water.

Saadat Hasan Manto had written this story set in Jeena and Karimdad's village. The story may have been imaginary, but the flow of water from India into Pakistan was indeed blocked for some time. Irrigated by the river Indus and its tributaries, the fertile soil of Punjab was perfect for farming. There were innumerable canals to guide the water from the rivers to the fields. Now the Partition divided Punjab into two, after which conflicts arose between the two Punjabs on how the water in the rivers and the canals was to be shared. On 1 April 1948, East Punjab, which had been allocated to India, blocked the water in several canals, cutting off supply to several places in West Punjab, which was part of Pakistan. The flow of water was resumed within a month or so, but the constant bickering over sharing of water persisted. Eventually, the governments of India and Pakistan signed the Indus Water Treaty of 1960 to govern how the two countries would share the waters of the Indus. But despite this the clash between them over this matter keeps resurfacing. And on the north-eastern side, there are conflicts with China over the sharing of the waters of the Brahmaputra. Apparently, China is preparing to build a large number of

dams on its portion of the river. The people of Assam live in fear that the flow of water in the Brahmaputra will be stopped.

Many large dams were constructed in India after independence. Controlling the flow of water at one spot and using this water effectively might be good for one's own country, but if this means the people of the other country through which the river also flows do not get water, why will they accept this injustice? So, there have been repeated conflicts between neighbouring countries over a fair share of water from rivers flowing through both of them. Take the Farakka barrage as an example, which is a bone of contention between West Bengal and Bangladesh. Trade in Bengal and all of Eastern India used to depend on the river Hooghly and on Calcutta port. So, after independence it was decided that steps would be taken to ensure the Hooghly never dried up because of the deposit of silt. In 1947 the border between India and Pakistan was drawn near Mithipur in Murshidabad, where the Ganga forks into two. In 1969, a barrage was built very close to this border in Farakka. A dam and a canal were constructed in a way to ensure that much of the water could be redirected into the Bhagirathi-Hooghly. This

would ensure an abundant supply of water in the Hooghly, preventing it from drying up.

But when the barrage was being planned, there was no discussion between India and East Pakistan about the sharing of water. So, once this barrage was completed, most of the water in the Ganga began to flow into the western stream. And East Pakistan was afraid that the Padma would eventually dry up and people would die in the absence of enough water. Discussions began between the two countries, continuing after East Pakistan became the independent country of Bangladesh, for a solution. But despite a number of pacts, the problem has not been entirely resolved. The damage on the Indian side has not been insignificant either. The regions close to the Ganga in Bihar, and the districts of Malda and Murshidabad in Bengal have repeatedly been flooded after the construction of the barrage, forcing people out of their homes. That building a barrage to save the Hooghly might do harm in other ways was something no one had considered earlier.

9. River dams: Gains and losses

Who controls the waters of a river? The answer to this question lies in who has more power. And it isn't as though the battle for control over a river is limited to two countries. The same battle of gains versus losses is also fought between people in the same country.

In the 1930s and '40s, America had astounded the world by constructing several huge dams on the Tennessee river to control floods. The USSR was also very proud of the giant dam on the Volga river. There was great excitement all over the world. It appeared that modern technology could be used to subdue rivers and defeat floods. That wasn't all, using massive dams to block the flow of water could also generate enormous amounts of electricity, and make water available for irrigating even faraway dry land. It was around this time, in 1947, that two hundred years of British rule came to an end in India. The country was already impoverished under unceasing oppression by the British empire. And then people were further devastated by the riots and violence that exploded under the pretext of religious differences. The government of a newly independent India said people must stand on their own feet, there would have to be tremendous improvements



in agriculture and industry so that everyone could have enough by way of food, clothing, and shelter. Given the enthusiastic response to large dams around the world, the government decided to use homegrown as well as foreign technology to build dams.

The Hirakud dam was constructed on the Mahanadi river in Orisha, and the Bhakra-Nangal dam, on the Sutlej in Punjab. Preparations were made for the construction of several dams on the Damodar river to control floods in Bengal and Bihar. Water for irrigation reached many dry areas; fields everywhere filled with crops. The enormous energy stored in the water collected at the dam was used to generate electricity. Many more people had lights in their homes now. These colossal projects also meant jobs for many. Some objections were heard, though. On the day the Hirakud Dam was inaugurated, many of those who had lost their homes protested with black flags. But, as in a number of other countries, the people of India too had great hopes from these river dams, so the protests were not very strong. But in the 1980s, winds of change began to blow in. By then people had begun to realise the dangers of river dams. Even if these big dams did prevent floods in some areas, they also increased the possibility of floods elsewhere. So, while some people made greater gains, getting a larger share

of the spoils, others had to pay a big price. When its path was blocked by a dam, the river, unable to proceed on its course, expanded sideways over large stretches of land. This water, which had overflowed both banks, was stored to create a reservoir. And then the water from this reservoir was taken to distant areas to irrigate the land, and to generate electricity. But then, much of area around the river was submerged in this reservoir. Those who found their land brimming with bountiful harvests because of dams were delighted. But those who lived on the banks of the river and had to be evicted naturally considered this form of development a curse. Dams also harm the environment in different ways. Constructing them in hilly areas, for instance, has led to disaster. The ground has become softer under the pressure of stored water, increasing the possibility of landslides. Which is why people began to protest against the construction of big dams in the 1980s and '90s—as we saw when the Narmada dam was being built.

It had been decided just a few years after independence that a huge dam would be built on the Narmada. The river runs through three states—Madhya Pradesh, Maharashtra, and Gujarat. Many dams, small and large, would be built along its course, but the biggest of them all would be in Gujarat, the Sardar Sarovar Dam. The dispute over how much of the water each of the three states would

get went on for some time. When work on the dam was about to begin in the early 1980s, the people of the villages around the site got together and said they would lose everything if the dam was built without making alternative arrangements for them to live. The government said the dam is crucial for the development of the country, it would ensure that everyone in the villages nearby could go and live elsewhere. No one would become homeless.

The construction of the dam began, but no arrangements were made for the people living on the banks of the river. Almost forty thousand families stood to lose their homes. In desperation they began a protest movement, news of which spread everywhere. Students, artists and others from all parts of the country supported them. Many of them even began living with the protestors. A case was filed in the courts, alleging that the government had not kept its word. The Narmada Bachao movement grew significantly large. It went on for decades, with repeated demands for the height of the dam to be lowered at the very least. The higher a dam is, the greater is the obstruction for the river, the more is the extent of land around it that's submerged, and the larger is the number of people who lose their homes. Since the 1930s, millions of people around the world have had their homes submerged because of river dams. Keeping this in mind, new dams are no longer constructed in Europe and America today. But

just a few years ago the government of India gave permission for the height of the Sardar Sarovar Dam to be increased significantly. While developed nations criticise dams today, our government says that some people had needlessly blocked the construction of the dam on the pretext of saving the environment. India's highest dam, the Sardar Sarovar Dam, was inaugurated in 2017 without a care for the protests that had lasted so many years.

Humans have repeatedly fought against rivers and brought them under control for various benefits. But some people have lost far too much in the unequal battle between rivers and humans. Especially poor people living beside rivers. Their power is limited, and there are very few people to listen to them or take them into consideration when the laws for governing the country are made. That's why the impoverished people living on the banks of the Narmada had stood in chest-deep water to conduct a *jal satyagraha*, a form of passive resistance. But the will of the powerful state proved supreme as the dam was constructed on the ground of benefits for the people and development for the country. Who do you suppose are the people excluded from calculations of these benefits when the blueprint for the country's development is made? If this development comes at the cost of distress for a large number of people, why is it even necessary? The history of rivers makes us ask these questions.

Complicated words and concepts

Delta	The triangular formation made by many years of silt deposits in the area where the river flows into the sea.
<i>Dewani/</i> Stewardship	The right that the Mughal emperor Shah Alam II gave to the East India Company in 1765 to collect taxes from Bengal, Bihar, and Orissa.
Embankment	The barrier erected on the bank of a river by making a high wall of earth.
Lease	The contract between the zamindar or landowner with a farmer, which states the dimensions of the land the farmer will cultivate, how long he will do it, and how much taxes he will pay. A one-year lease, for instance, means the contract is valid for a year.
Dam	Very high concrete wall with gates built into it, used to block the flow of the river and create a massive reservoir of water which is used for various purposes. The gates are opened or closed as needed to control the flow of water.
Barrage	A barrage is also a kind of dam, but it is not used to form a reservoir, it is only used to change the direction in which the water flows.
Satyagraha	A technique of protest against injustice in which no violence is employed. Mahatma Gandhi had made this form of protest popular by using it against British rule.

And finally

How did I find out all the things I have written in this book? This is a crucial question. There are many books and other writings about rivers. Experts in history, geography, political science, economics, and geology, among others, have researched and written about different aspects of rivers. Naturally, I haven't been able to read all of these works. I have primarily read some of the works of history. I will name some of them here. You can consider reading them when you're older. Sudipta Sen has written *Ganga: The Many Pasts of a River*, a history of the Ganga from ancient days to the present, covering a huge stretch of time. Kalyan Rudra's research is in the geography, geology, and history of the Ganga-Brahmaputra Delta. Reading his writings will help you find out some of the history of the flow of rivers here, of the drying up of the Saraswati, of the impact of the construction of the Farakka Barrage. Let me give you the names of some of his works: *Rivers of the Ganga-Brahmaputra-Meghna Delta: A Fluvial Account of Bengal*, *Changing River Courses in the Western Part of the Ganga-Brahmaputra Delta*, and, in Bengali, *Banglar Nodikatha* (The Story of Bengal's Rivers). Robert Ivermsee's *Hooghly: The Global History of a River* talks of the trade around the Hooghly river and the connections of the regions around it with the world's markets. Rohan D'Souza's *Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern*

India, and Nitin Sinha's *Fluvial Landscape and the State: Property and the Gangetic Diaras in Colonial India, 1790s-1890s* give accounts of the Permanent Settlement, the riverine island, and dams in Bengal. You can find Raja Bidanund Roy's story in Erica Mukherjee's article *The Impermanent Settlement: Bengal's Riparian Landscape 1793-1846*. Ritupan Goswami's PhD thesis *Rivers and History: Brahmaputra Valley in the Last Two Centuries*, and Arupjyoti Saikia's book *The Unquiet River: A Biography of the Brahmaputra* will prove very useful in understanding the history of the Brahmaputra and of Assam. In his book *The Bengal Delta: Ecology, State and Social Change, 1840-1943*, Iftexhar Iqbal writes the history of the advent of the railways. In addition to these, Debjani Bhattacharya's *Empire and Ecology in the Bengal Delta: The Making of Empire*, Kaustubh Mani Sengupta's *William Tolly and His Canal: Navigating Calcutta in the Late Eighteenth Century*, and Jenia Mukherjee's *Blue Infrastructures: Natural History, Political Ecology and Urban Development in Kolkata* are very important for understanding the history of how an area of bogs and swamps was transformed into the city of Calcutta. In her book *In the Belly of the River: Tribal Conflicts Over Development in the Narmada Valley*, Amita Baviskar has written about the struggles of the people living on the banks of the Narmada. If you'd like to know Jeena and Karimdad's story, read Saadat Hasan Manto's short story "Yazeed".

About the Author, Translator and the Artists

Debarati Bagchi has written this book. She is a Senior Research Fellow at the Max Weber Forum for South Asian Studies, New Delhi.

Arunava Sinha has translated this book into English. He is a literary translator and Associate Professor of creative writing at Ashoka University.

Wasim Helal has done the art direction, cover and maps for this book. He is a graphic designer by profession. Wasim does illustrations, covers and art direction for many Indian and foreign publishers.

The illustrations in this book are by Ranjit Chitrakar and Sirajudaulla Chitrakar. By family tradition they are *pata* artists—those who make art on fabric. Ranjit and Shiraz work in the village of Naya, which is under the jurisdiction of Pingla police station in the West Medinipur district of West Bengal. Following the tradition of *pata* art, they primarily paint narratives and compose songs about Hindu gods and goddesses. But these days their art covers other themes too. *Pata* art is an example of the tradition of religious harmony in Bengal. Although the artists are often Muslims, their art and lyrics are usually centred on stories of Hinduism. What's more, according to their own social narrative, they are descendants of the Hindu god Viswakarma. This is how Islam and Hinduism is blended in their lives and work.

Many people gave us their views and offered encouragement after reading the first draft of this book in two workshops and in their personal capacities. Let me give you their names: Achin Chakraborty, Amitava Gupta, Anirban Mandal, Anwasha Sengupta, Rijiswan Mukherjee, Ritajyoti Bandyopadhyay, Kalyan Rudra, Kritika Sengupta, Kaustubh Mani Sengupta, Tanika Sarkar, Devtanu Raha, Debanjana Nayak, Nilanjan Pande, Priyank Patel, Rupkatha, Hiya Sen, Subhash Ranjan Chakraborty, Simantini Mukhopadhyay, Supurna Banerjee, Santanu Sengupta, and Hassan Momin. We are grateful to them. Hassan Momin also helped with the maps in this book. We are grateful to Somrita Urni Ganguly for her comments on the English translation.

The hilsa in danger

Torrential rain outside, and steaming hot khichuri and fried hilsa on your plate. The very thought makes your mouth water. The life of our favourite fish, hilsa, is a strange one. They live in saline seawater, and lay their eggs in the sweet water of the river. As soon as it's time to lay eggs in the rainy season, droves of hilsa swim towards the river from the sea. Swimming mile after mile against the current, they spread out across various rivers.

But nowadays you hear people everywhere complaining about hilsa. Apparently there is a dearth of the fish in rivers, which is making it very expensive. This is bound to happen, because the hilsas are not being allowed to swim upstream, lay eggs, and grow in size. Before this can happen, the fish is caught while it is still small and sold in markets. Not even laws and punishment against this practice are able to stop this.

What's more, in trying to use rivers in various ways, humans are making life unbearable for fish. Dams across rivers are blocking the path of the hilsas. And then garbage from houses and hospitals and factories, fertiliser from farmland, and oil from steamers and ships flow into rivers every day. The more the pollution increases, the harder it becomes for fish to survive in the water.

All of you have played snakes and ladders. You have to roll the dice and then move your piece accordingly. If you end up in the same square as the mouth of a snake, you have to slide down all the way to the square with its tail. And if you go to a square with the bottom of a ladder, you can climb a long way up. There's a game just like this on the last page of this book.

Think of the ludo pieces as hilsas. The fish have to reach the clean water of the river to lay their eggs. Many obstacles block their way. Roll the dice and move forward, though you have to retreat when you face an obstacle. Play the game with your friends to find out whose hilsa is the first to make it to the river. And keep in mind as you play how much the animal world suffers from pollution and the various forms of human tyranny.

Saline
Sea Water



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The Hilsa
in Danger



Fisherman -
move one
step
backwards

Fisherman -
move one step
backwards



Waste from factory -
move four steps backwa



Waste from hospital -
move eight steps
backwards

Pesticide from
farmland -
move three steps
backwards

Sweet water
of the river

Dam on
river - move
four steps
backwards

The Institute of Development Studies Kolkata (IDSK) was set up in 2002 by the Government of West Bengal as an autonomous centre of excellence in social sciences. It is a society with an autonomous governing body with eminent scholars and Government's nominees. IDSK is recognized for its advanced academic research and informed policy advice in the areas of literacy, education, health, gender, employment, technology, communication, human sciences and economic development. The academic programmes at IDSK include MPhil (2006-2022) and PhD in social sciences and short training courses for research scholars. It offers state-of-the-art IT and library facilities to its students and research scholars. It is fully funded by the Government of West Bengal. IDSK has been recognized by the ICSSR under the category of "ICSSR Recognized Research Institutes".

The Rosa Luxemburg Stiftung (RLS) is a German political foundation that is part of the democratic socialist movement. True to the legacy of its namesake Rosa Luxemburg (1871-1919), it stands in solidarity with the workers' and women's rights movements. The organization serves as a forum for debate and critical thinking about political alternatives, as well as research centre for social development. The RLS has close ties to the German party DIE LINKE. RLS provides political education and a centre for advanced social research in both Germany and throughout the world. RLS is one of six party-affiliated political foundations in Germany; it supports partners in over 80 countries striving for social justice, strengthening public participation, and social ecological development.

How do you learn history while keeping your eyes and ears open? What does it mean to be conscious of history? The series 'First History Lessons' was born from the search for answers to these questions. Each of the books is on a unique subject. The text is accompanied by pictures drawn by patachitra artists. The objective of this book is to explain, simply, various periods and various complex ideas in history. After reading these books, children will learn to ask questions—that is our hope.

